IN THE TITLE:

Please amend the title to read as follows:

Method of Forming a Corrosion Resistant Coating

IN THE SPECIFICATION

Please amend or insert the following paragraphs as indicated:

[0018] Furthermore, the coating 150 should be sufficiently dense to substantially prevent species in the corrosive environment 110 from penetrating through porous regions of the coating 150, and attacking the underlying substrate 100. The density of the magnesium fluoride coating can be defined as: volume of magnesium fluoride in the coating/total volume of (voids plus magnesium fluoride plus other impurities) in the coating. A higher density tends to reduce the probability of exposing the underlying part (e.g., ~~AlN~~ AlN) to attack by corrosive gases. Thus, while a coating density of about 70-80% is sufficient to protect the underlying substrate 100, the density of the magnesium fluoride coating 150 is desirably at least 85%, or more preferably, at least about 95%, or close to about 100%. Furthermore, to avoid cracking of the coating 150, a thinner coating is generally preferred, while a more conformal coating 150 provides improved protection of the underlying substrate. To achieve these characteristics, the magnesium fluoride coating 150 is preferably deposited by CVD or by physical vapor deposition (PVD). The coating 150 has, for example, a thickness of less than about 2 μm, or preferably, about 1 μm or less. Such a magnesium fluoride coating 150, for example, has been found to resist corrosion in environments containing dissociated NF3 (e.g., environments containing fluorine radicals) and having temperatures above 550°C.

[0025] To achieve the desired purity, e.g., about 99%, the coating 150 is deposited at the temperatures described above and at a chamber pressure of at least as low as

$1x10^{-5}$ torr - i.e., preferably a reduced pressure environment of lower than $1x10^{-5}$ torr. A chamber pressure of $1x10^{-6}$ torr provides an environment containing fewer contaminants than at 10^{-5} torr, and therefore results in a coating having a higher purity. However, this improvement in coating purity with decreasing pressure becomes less significant at higher deposition temperatures because the denser coating obtained at a higher deposition temperature has fewer porous regions where contaminants (e.g., moisture) may lodge. Therefore, at sufficiently high deposition temperatures, lowering the chamber pressure may not produce a corresponding increase in coating purity. Accordingly, a process for depositing the magnesium fluoride coating 150 will preferably balance temperature and pressure to achieve the desired purity and density. It will be understood, that in order to resist corrosion when the part (e.g., comprising the coating 150 and substrate 100) is exposed to the corrosive environment 110, the coating 150 should cover all surfaces 100S of the substrate 100, that can potentially be exposed to the corrosive environment 110.